CLAIMS

1. A particle, comprising:
a semiconductor nanocrystal,
wherein said nanocrystal is doped.

2. The particle of claim 1, wherein said nanocrystal is n-doped.

3. The particle of claim 1, wherein said nanocrystal is p-doped.

4. The particle of claim 2, wherein said nanocrystal comprises a 2-6 semiconductor compound.

5. The particle of claim 4, wherein said nanocrystal is selected from the group consisting of zinc oxide, cadmium sulfide and cadmium selenide.

6. A colloid, comprising a plurality of the particles of claim 1.

7. A film, comprising a plurality of the particles of claim 1.

8. The particle of claim 1, further comprising capping groups, on the surface of said nanocrystal.

9. A film, comprising a plurality of the particles of claim 4.

10. A method of making a particle, comprising:
adding at least one carrier to a semiconductor nanocrystal, to form a doped semiconductor nanocrystal.

11. The method of claim 10, wherein said adding comprises contacting said semiconductor nanocrystal with an oxidizing or reducing agent.

12. The method of claim 10, wherein said adding comprises oxidizing or reducing electrochemically.

13. The method of claim 10, wherein said at least one carrier is at least one electron.

14. The method of claim 10, wherein said at least one carrier is at least one hole.

15. The method of claim 13, wherein said nanocrystal comprises a 2-6 semiconductor compound.

16. The method of claim 15, wherein said nanocrystal is selected from the group consisting of zinc oxide, cadmium sulfide and cadmium selenide.

17. A method of making a colloid, comprising making a plurality of the particles by the method of claim 10.

18. A method of making a film, comprising:
forming a colloid by the method of claim 17, and
applying said colloid to a surface.

19. The method of claim 1, wherein said particle comprises capping groups, on the surface of said nanocrystal.

20. The method of claim 11, wherein said semiconductor nanocrystal is in a film comprising a plurality of semiconductor nanocrystals.

21. A product, prepared by the method of claim 10.

22. A product, prepared by the method of claim 11.

23. A product, prepared by the method of claim 12.

24. A product, prepared by the method of claim 13.

25. A product, prepared by the method of claim 17.

26. A product, prepared by the method of claim 18.

27. A product, prepared by the method of claim 20.

28. A display, comprising a plurality of the particles of claim 1.

29. An opto-electronic device, comprising a plurality of the particles of claim 1.

30. The opto-electronic device of claim 29, wherein said device is a memory array.

31. A method of making an object appear cooler or warmer to an IR detector, comprising coating said object with a plurality of the particles of claim 1.

32. An n-p junction, comprising a plurality of the particles of claim 1.

33. The n-p junction of claim 32, further comprising a polymer electrolyte.